REMARKS

By way of this amendment, the specification and claims 10, 11 and 18 have been amended. Claims 1-24 remain pending in the present application. Applicant respectfully requests reconsideration and allowance of the present application.

In the Office Action, claim 11 was objected to due to a cited informality. Applicant has amended claim 11 to correct the informality to recite a first thermal detection sensor, thereby rendering this objection moot.

Next, claims 10 and 18 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner noted that a claim which claims both an apparatus and method steps of using the apparatus is indefinite, and that claims 10 and 18 recite a method of detector operation upon installation while dependent on all the apparatus elements recited in claims 1 and 11. Applicant has amended claims 10 and 18 to recite that the detector is located on the vehicle to detect one or more objects in a blind spot region of the vehicle, thereby rendering this rejection moot.

Claims 1-24 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,753,766 to Patchell in view of U.S. Patent No. 4,321,594 to Galvin et al. Applicant respectfully traverses this rejection for the reasons presented below.

Before discussing the prior art rejection, it is important to appreciate Applicant's invention and the advantages realized therefrom. Applicant's invention provides for a thermal radiation detection and method of detecting thermal radiation in multiple coverage zones. The detector includes a support structure, a first thermal detection sensor coupled to the support structure, and a second thermal detection sensor coupled to the support structure. The first thermal detection sensor is arranged to detect thermal energy in a first coverage zone, while the second thermal detection sensor detects thermal energy in a second coverage zone. The detector further includes an optical lens, disclosed as a shared single element optical lens 50, coupled to the structure and arranged to direct thermal energy from the first coverage zone to the first thermal detection sensor and to direct thermal energy from the second coverage zone

to the second thermal detection sensor. The thermal radiation detector and method advantageously detect thermal radiation emissions from within multiple coverage zones by employing multiple thermal sensors and a shared single lens element which allows for a compact and cost-affordable detector.

The Patchell patent discloses a detection system for detecting objects in a blind spot of a vehicle by employing a plurality of infrared sensors, such as thermopile sensors, to detect changes in a thermal scene along the side of a host vehicle to detect the presence of a thermal emitting object, such as another automobile, in the blind spot region of the host vehicle. This approach employs identical sensors positioned at predetermined locations along the side of the host vehicle, such that the forward-most sensor is aimed in a particular direction to receive a thermal image from a specific area, and a second sensor is located further aft on the host vehicle and is positioned to generally view the same area, some predetermined time period after the first sensor as the host vehicle moves forward. By knowing speed of the host vehicle, a microcontroller determines the amount of time shift that is necessary to have data from the same physical area at two different points in time. If there is a temperature increase in the second thermal image, then it is assumed to be the heat emitted from a vehicle. The detection system disclosed in the Patchell patent essentially employs multiple thermal detection sensors each having a separate lens element for receiving and detecting thermal energy in a coverage zone.

The Galvin et al. patent discloses a passive infrared intrusion detection system employing one or more Fresnel lenses to focus incident infrared energy onto one or more associated detector elements. The embodiment disclosed in FIG. 6 of Galvin et al. employs two separate detectors for each beam of radiation, but as recited in column 3, lines 21-25, clearly requires a pair of Fresnel lenses to focus radiation onto respective detectors 34 and 36. Thus, the embodiment of FIG. 6 in Galvin et al. clearly requires two Fresnel lenses to focus radiation onto the two detectors.

In contrast, Applicant's independent claim 1 recites a detector for detecting thermal radiation in multiple coverage zones comprising a support structure, a first thermal detector

sensor coupled to the support structure, and a second thermal detector sensor coupled to the support structure. The first thermal detection sensor is arranged to detect thermal energy in a first coverage zone, and the second thermal detection sensor is arranged to detect thermal energy in a second coverage zone. The detector further includes an optical lens coupled to the support structure and arranged to direct thermal energy from the first coverage zone to the first thermal detection sensor and to direct thermal energy from the second coverage zone to the second thermal detection sensor. Independent claims 11 and 19 similarly recite an optical lens directing thermal energy to first and second detection sensors.

The requirements for making a *prima facie* case of obviousness are described in the *Manual of Patent Examining Procedures* (MPEP) §2143 as follows:

> In order to establish a *prima facie* case of obviousness, three criteria must be met. MPEP § 706.02(j). Firstly, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). Secondly, there must be a reasonable expectation of success. *In re Merck & Co., Inc.*, 231 USPQ 375 (Fed. Cir. 1986). Thirdly, the prior art reference (or references) must teach or suggest all the claim limitations. *In re Royka*, 180 USPQ 580 (C.C.P.A. 1974).

Nowhere do either of the Patchell or Galvin et al. patents teach or even suggest a detector for detecting thermal radiation in multiple coverage zones employing a single optical lens arranged to direct thermal energy from a first coverage zone to the first thermal detection sensor and to direct thermal energy from the second coverage zone to the second thermal detection zone. In the Office Action, the Examiner states that the use of "an" does not prohibit multiple lenses. Applicant submits that an optical lens is recited in the claims arranged to direct the thermal energy from the first coverage zone to the thermal detection sensor and to direct thermal energy from the second coverage zone to the second thermal detection sensor. Therefore, the single optical lens recited in Applicant's claims directs thermal energy to two different thermal detection sensors.

Patchell clearly employs separate lenses for each detector which is believed to result in added size and cost. With reference to FIG. 6, the Galvin et al. detector clearly states that multiple Fresnel lenses are employed to focus radiation onto multiple detectors. In the specific embodiment shown in FIG. 6, a pair of Fresnel lenses focuses radiation onto respective detectors 34 and 36 as stated in column 3, lines 23-36. Accordingly, neither of the Patchell or Galvin et al. patents discloses a single lens for focusing thermal energy onto two thermal detection sensors as recited in Applicant's claims.

Accordingly, Applicant submits that the Patchell and Galvin et al. patents individually or in combination fail to teach or suggest all of the claim limitations set forth in independent claims 1, 11 and 19, and the rejection of these claims and the claims dependent thereon should therefore be withdrawn, which action is respectfully solicited.

Additionally, Applicant notes that the Patchell and Galvin et al. patents further fail to teach or suggest the support structure comprising a conductive heat sink thermally coupled to the first and second thermal detection sensors as recited in dependent claim 4, independent claim 11 and dependent claim 21, and therefore these claims should be allowable for this additional reason.

Accordingly, Applicant's claimed invention as recited in claims 1-24, as amended, would not have been rendered obvious to one of ordinary skill in the art at the time of the present invention in view of the Patchell and Galvin et al. patents, and the rejection to claims 1-24 under 35 U.S.C. §103(a) should therefore be withdrawn.

The remaining prior art made of record was not applied to the claims, and thus is not discussed herein. Applicant has reviewed the Asano et al. reference, and agrees with the Examiner that such reference does not teach or suggest the claimed invention.

Applicant has further amended the specification to recited issued patent numbers corresponding to serial or publication numbers recited in the specification.

In view of above remarks and amendments, it is submitted that claims 1-24 define patentable subject matter and are in condition for allowance, which action is respectfully solicited. If the Examiner has any questions regarding patentability of these claims, the Examiner is encouraged to contact Applicant's undersigned attorney to discuss the same.

Respectfully submitted,

April 25, 2006
Date

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